

APPENDIX A

WINNIPESAUKE RIVER WATERSHED

(HUC8: 01070002)

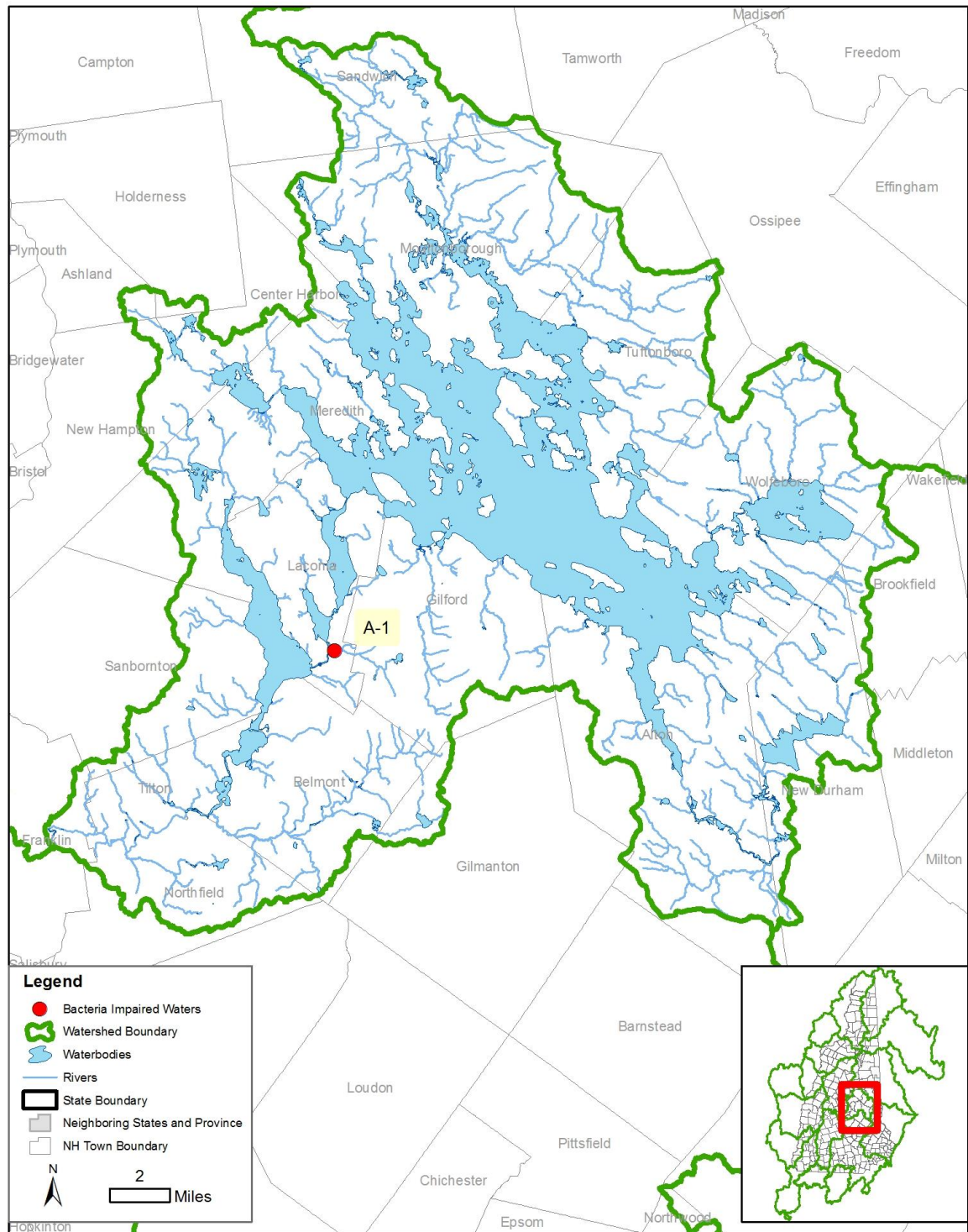
I. WATERSHED DESCRIPTION AND MAPS

The Winnepesauke River Watershed covers an area of approximately 486 square miles situated in eastern, central part of New Hampshire. There are 21 towns located at least partially within the watershed, extending from the southern-most town of Alton to the northern-most town of Sandwich. West to east the town boundaries are Franklin and Brookfield respectively. As shown in Figure 1, the primary watercourse in the region is the Winnepesauke River which is the outflow of Lake Winnepesauke. The river course begins at the lake and flows west through a series of smaller ponds exiting the watershed in Franklin, NH. Notable mountains in the area are the Belknap Range on the southwestern border, the Moose Mountains to the southeast, and the Ossipee Mountains along the northern watershed border.

Based on the 2014 303(d) list, one assessment unit (AU) in this watershed, Jewett Brook, is listed as being impaired for bacteria. The location of bacteria impaired surface water AU is shown on Figure 1 as a red circle. Jewett Brook flows into the Opeechee Bay section of Lake Winnepesauke. Section A1 of this appendix presents the bacteria data used to list the AU as impaired on the 2014 303(d) list and the percent reduction needed to meet the water quality criterion (and TMDL), based on the highest recorded bacteria measurement that exceeds the criterion for the AU. Section A1 also includes a discussion of the bracketed wet weather and dry weather sampling conducted by DES in the summer of 2015 to assist the community in identifying the potential source(s) of the high bacteria in Jewett Brook and identification of appropriate restoration measures.

Figure 1: Winnepesaukee River Watershed

**Winnepesaukee River Watershed
HUC 8 Watershed ID Number 01070002**



A1: Jewett Brook

Figure 2: Photo of Jewett Brook Sample Site 01-JWT* looking upstream



*Sample 01-JWT is taken from the bridge in the photo

AUID: NHRIV700020201-16

Characteristics: freshwater, class B designation, primary contact recreation.

Impairment: *E coli*

Water Quality Criteria & TMDL for *E coli*

Single sample: 406 CTS/100mL

Geometric mean: 126 CTS/100mL

Percent reduction for the Single Sample to meet the TMDL: 54%

Percent reduction for the Geometric Mean to meet the TMDL: 57%

Data: NHDES EMD, 2014 303(d) list

Single sample *E coli* results (CTS/100ML) Water Quality Criteria = 406 CTS/100mL

Station Name	Station ID	Date	Result
Jewett Brook	03-JWT	6/12/13	570.0
Jewett Brook	03-JWT	7/9/13	890.0
Jewett Brook	03-JWT	8/12/13	50.0
Jewett Brook	03-JWT	10/10/13	50.0
Jewett Brook	01-JWT	6/24/14	10
Jewett Brook	01-JWT	6/24/14	40
Jewett Brook	01-JWT	7/15/14	460
Jewett Brook	01-JWT	7/15/14	550
Jewett Brook	01-JWT	8/18/14	360

Shaded cells indicate exceedance of water quality criteria. Method detection limits are 2.0 – 400.0 cts/100mL. Results below 2.0 are listed as 1.0 (½ the detection limit) and any counts greater than 400 are listed as 400.

Geometric mean *E. coli* results (CTS/100ML) Water Quality Criteria = 126 CTS/100mL

Station Name	Full Comparison Description	Date	Result
Jewett Brook	E. COLI-GEO-CP	8/13/13	293.8
Jewett Brook	E. COLI-GEO-CP	8/18/14	118.3

Shaded cells indicate exceedance of water quality criteria.

Recommended Restoration Measures

On June 17th 2015, staff from DES met with the City of Laconia's Planning Department staff member Scott McPhies at Jewett Brook sampling station 01-JWT (see photo in Figure 2). Mr. McPhies is also a Volunteer Lake Assessment Program (VLAP) member. The purpose of the meeting was to discuss the development of the TMDL for Jewett Brook and to identify additional sampling locations upstream in the brook where bracketed monitoring could be conducted by DES in both wet and dry weather to assist the City in determining the source of high bacteria levels and with identifying restoration measures. Seven sample site locations in Jewett Brook were identified spanning an area of approximately one and half miles upstream of the confluence with Opechee Bay on Lake Winnepesaukee. Five of the sample sites are in Laconia and two of the sites are in Guilford. The sample sites were chosen in order to collect upstream and downstream samples (bracketing) in Laconia of the urbanized area of Route 3/107, the densely populated residential areas along the brook, a city park, a small industrial area and the Route 3/11 bypass in Guilford. On July 1st 2015 staff from DES conducted a round of wet weather monitoring during a one inch rainstorm. DES staff plans to conduct a dry weather round of sampling at the same seven sample sites. Results from both wet weather and dry weather sampling events will then be reviewed with representatives from the City of Laconia and the Town of Guilford with the goal of identifying appropriate restoration efforts. Following implementation, monitoring for *E. coli* should continue to determine if the restoration measures are sufficient to meet water quality standards or if additional restoration activities are necessary.